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ABSTRACT

The topic of repeated judgments of interest in vocational education was examined in a study in which 10 female full-time technical and further education (TAFE) students (aged 15-60 years) were handed 120 randomly selected real profiles of TAFE students who had completed subject interest surveys in a previous study. The 10 TAFE students judged how interested they would be in studying subjects described by the profile writers. After the students had made a total of 120 judgments, they were retested. The students' responses were analyzed in terms of a lens model in which judgment is considered a function of task properties, cognitive control, and knowledge. The question of whether cognitive feedforward alters students' perceptions was examined by considering students' responses to seven cues: quality of teaching, importance of the subject, ability, difficulty of the subject, whether the course was liked, study time, and homework time. No significant differences in the levels of lens model indices from pre- to post-information judgments were found. It was concluded that students overcompensated in their efforts to maximize judgment accuracy and that they were unable to make full use of the entire range of cues. (13 references) (MN)

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REPEATED JUDGEMENTS OF INTEREST IN VOCATIONAL EDUCATION: A LENS MODEL ANALYSIS

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REPEATED JUDGEMENTS OF INTEREST IN VOCATIONAL EDUCATION: A LENS MODEL ANALYSIS

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ABSTRACT

The purpose of this study was to decompose student decision-making about the levels of subject interest in vocational education. Ten technical and further education students made 120 judgements of the level of classroom interest from actual protocols of responses. These paid participants repeated the judgements after receiving details of their personal judgement policy in graphical form and the actual environmental relationships in graphical form. Judges were operating in a relatively predictable environment (Multiple R= 0.795). Cues involved the quality of teaching, the importance of the subject, ability, difficulty of the subject, whether the course was liked, study time and homework time. Results were analysed in terms of a lens model in which judgement achievement is a function of the task properties, cognitive control and knowledge. Students' mean level of achievement correlation (Fisher z_r) increased from 0.31 to 0.39. There were no significant differences in the levels of lens model indices (G, Rs, C) from pre- to post-information judgements. Results suggested that students over-compensated in their efforts to maximise judgement accuracy and that they were not able to make full use of the entire range of cues. The results have implications for student perceptions of their interest in vocational education subjects.

REPEATED JUDGEMENTS OF INTEREST IN VOCATIONAL EDUCATION: A LENS MODEL ANALYSIS

Educational interest is a phenomenon that operates within the area of student motivation and is viewed as a direct influence on learning, offering meaningful descriptions of the content of a person's efforts in vocational education settings. Hidi (1990) characterised interests as a mental resource for learning and recent years have seen a renewed study of interests and their role in learning and development (see Renninger, Hidi & Krapp, 1992).

Individual Interest

Substantial evidence has accrued that educational interest is related to topic recall, the quantity of recall and the depth of learning (Renninger, 1992; Schiefele & Krapp, 1996). When the impact of interest on achievement is assessed within an individual there is a significant effect size. For instance in vocational education the effect of subject interest was almost four times that of quality of teaching in a study of 1,300 technical and further education students in Australia (Athanasou, 1994). Even group studies of interest report moderate, significant and positive correlation between interest and achievement (eg. Schiefele, Krapp & Winteler, 1992).

A tradition of German research in interests that has centred on Munich (H. Schiefele, 1974; U. Schiefele, 1991; Krapp, 1993) has characterised interest as a distinct and special person-object relation (where 'object' can be a course, subject, field, occupation, hobby, activity, skill, sport etc). Moreover, the area of interest research was divided usefully into individual or situational interests. Situational interest deals with the momentary interestingness in a situation and how that influences learning or performance (e.g., curiosity, novelty, arousal, content, text-based interest). Individual interest, on the other hand, reflects a longstanding personal preference with its own components of stored knowledge, emotionality and value. This continuing relationship of a person with an object holds across different contexts and is a habitual or dispositional personality

features. To summarise, interest is a relational construct that can be used to characterise a student's special relationship with a subject.

As part of a program of research, some components of individual interest had been investigated in a study of 940 technical and further education students from some 20 colleges and 60 courses (Athanasou, in press). They included, amongst others, the importance of the subject, the relevance of the course to students, whether it was their best subject, their easiest subject, the quality of teaching, the amount of time spent on homework and time spent studying. In addition to these factors, social and demographic variables together with vocational interests and course preferences were also investigated. The importance of this study was that it used an idiographic design in which subjects acted as their own controls. Results indicated that there were no effects of gender, age, mode of study (part time or full time) or vocational interests on the extent of subject interests. Rankings of interest were, however, related more to factors such as the best and easiest subjects, the most relevant and most important subjects and to a lesser extent, quality of teaching, study and homework time.

The present study is an extension of this idiographic research on individual interest and considers whether students are able to make accurate judgements of interest in a subject and whether they can be helped to improve the accuracy of their judgement. It takes into account which specific factors a student considers to be important when he or she decides his or her own interest in a subject. In addition to this, an attempt is then made to improve the judgement policies of students. This program of research represents the application of a representative design (Brunswik, 1952) and the lens model developed by Hursch, Hammond and Hursch (1964) to the study of educational interest. It also represents the first application of cognitive feedforward to perceptions of interest. The following sections explain some aspects of these approaches.

Idiographic research, representative design and the lens model

An idiographic approach represents a powerful design that focuses on individual rather than group data. It contrasts sharply with nomothetic approaches or group studies that are popular in modern education but which are not always able to describe the learning of a person or to produce results which can be extended to other contexts. An

idiographic design allows for an intensive analysis of the person in action. The emphasis is on multiple sampling of situations within an individual as opposed to sampling of multiple individuals in only one situation. It seeks to determine the lawfulness of a person's judgement across situations and unlike other research designs does not require large samples of individuals but it does require large samples of situations. For the sake of the reader, who is not familiar with judgement analysis, it will be described in some detail.

Judgement analysis

Judgement analysis (Cooksey, 1996) provides an ideal experimental basis for representative investigations because it permits a comparison between the judgement policies of an individual and the actual ecology. One expression of judgement analysis is a double-system lens model (see Figure 1) that analyses the repeated interaction between a person and a situation. The X_j represent real situations for judgement with a distal criterion or measure that is explicitly tied to each profile of information. Achievement (r_a) indicates the correlation between each person's judgement and the actual criterion (in this case the level of student interest in a subject). Knowledge (G) reflects the understanding of the task requirements (i.e., the correlation between residuals). Task control (R_e) is the correlation between the actual criterion and estimated criterion scores and reflects the upper limits of a person's potential judgement achievement. Cognitive Control (R_s) is the degree of similarity between judgements and predicted judgements; it reflects the judgement predictability.

In the double-system design the participant's perception of interest can be compared to (ie., correlated with) the actual level of interest. In addition, we can determine which cues a person is using to come to that judgement, as well as comparing the cues used with those actually important in the ecology. All of this is summarised neatly by the lens model equation of Hursch, Hammond and Hursch (1964) (subsequently modified) in which it is assumed that performance (ie. correlation of judgements with the actual level of interest) is equal to knowledge times task predictability times cognitive control.

$$r_a = GR_eR_s + C\sqrt{(1-R_e^2)}\sqrt{(1-R_s^2)}$$

where:

r_a = the achievement index (ie. the correlation between subject judgements and the actual level of interest)

G = the knowledge index (ie. the correlation between the linearly predictable variance in the task system and that in the cognitive system)

R_E = task control or the predictability index (ie. the multiple correlation of the criterion with the predicted level of the criterion)

R_S = cognitive control or the policy consistency index (ie. the multiple correlation of the cues with the judgement)

C = correlation between the residuals (ie. the unmodeled knowledge).

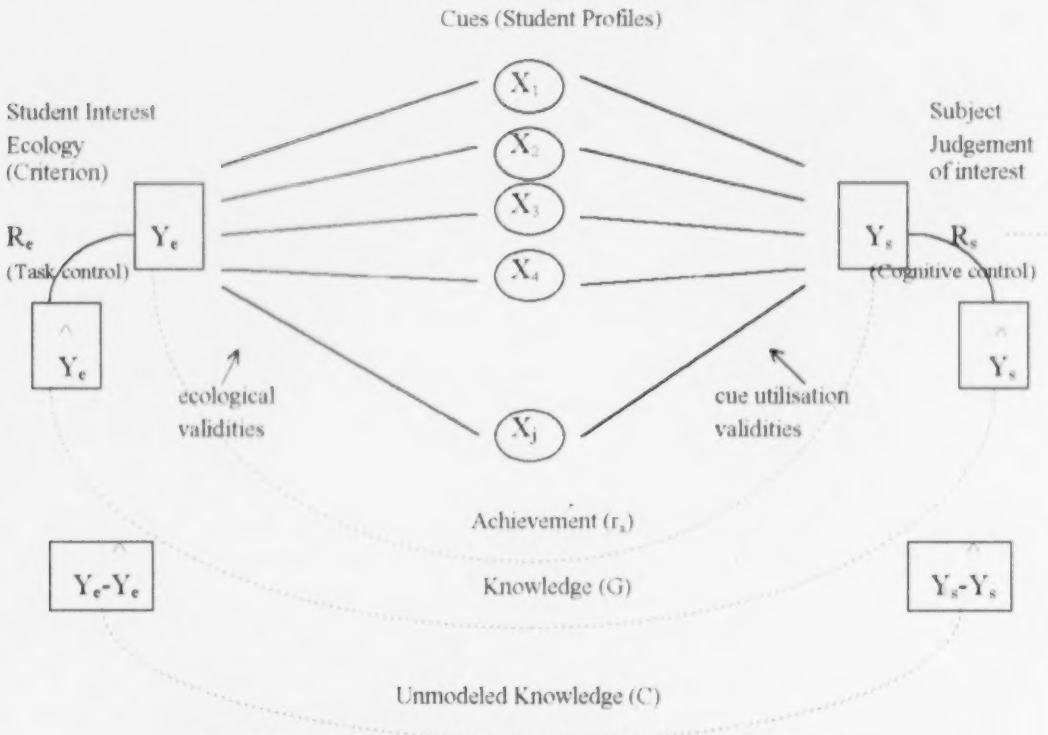

Figure 1. A double system lens model for analysing interest judgements

In this representative design, individuals are presented with multiple scenarios containing profiles of information on students. The profiles were derived from actual student survey responses in which people indicated how much they liked a subject compared to all the other subjects they were studying. This actual level of interest represents the ecology and the criterion to be judged. To assist judges, they are provided with information about the person in terms of a profile containing a number of cues, such

as: how this subject ranked in terms of relevance, importance, teaching quality, how easy the subject was, how good he/she was at the subject and the amount of time spent on homework and study. Accordingly, this is firstly a study of how each person reacts to many different real situations and what types of judgement policies are used by each person; then it goes on to examine whether it is possible to modify these perceptions using cognitive feedforward.

Cognitive feedforward

Cognitive feedforward needs to be distinguished from outcome feedback. Outcome feedback gives information about whether a judgement is correct or incorrect. On the other hand, cognitive feedforward summarises information about the whole set of judgements made by a person; it is a means of providing feedback to a person but it takes place prior to the next series of judgements. It is defined as: "A numerical, verbal and/or graphical summary of a judge's performance in a judgement task, perhaps obtained following judgements of a specified number of profiles, but delivered before subsequent judgements on new profiles are made" (Cooksey, 1996, p.368). The value of feedback information has been shown to be greater even than outcome information about correctness of a judgement because information about the cue and criterion relationships facilitates an understanding of the complexity of the judgement task.

Research questions

In the absence of prior research to guide the formulation of hypotheses, three research questions were determined *a priori*: (a) how well can a student judge the actual level of interest given information about an individual's educational situation?; (b) which factors does a student take into account when determining level of interest?; and (c) do students alter their perceptions as a result of cognitive feedforward?

METHOD

Participants

The 10 participants in this study were all female full-time students in Office Administration. They ranged in age from 15 to 60 years. Most (n= 8) had completed the highest level of secondary schooling and all had a previous educational qualifications (certificate or trade).

Procedure

Permission to conduct the study at the Sydney Institute of Technology was obtained from the Director of the Institute and a meeting was arranged with the Heads of Studies who nominated one class to be contacted. The class teacher arranged for an outline of the study to be provided to potential participants. Participants (n=16) were advised that involvement was voluntary and confidential and that no names would be recorded. The study was conducted off-site at the University of Technology, Sydney, which is in close proximity to the students' college. Students made appointments and the study was conducted in groups of varying size. Ten students were available to return and participate in Phase II of the study after 5 days. To encourage a high quality of data collection and accuracy, students were offered two movie tickets for participating in each phase of the study No claim is made for the representativeness of the sample. Ethics approval for the study was obtained and students completed a declaration prior to participation.

Instrument

Phase I. Students were handed a pre-printed book containing 120 real profiles of technical and further education students who had completed Subject Interest Surveys as part of the study by Athanasou (in press). Identifying details were deleted from the surveys. The surveys (N=120) were randomly selected from the 940 in the earlier study. The information contained in each of the 120 profiles related to the seven cues listed in Table 1. The participant read the information from the "real" student and was then asked

to make a judgement of how interested she would be in studying a subject which others had described in this manner.

Participants made 120 judgements of their level of interest. They were asked to rank how interested they would be in this subject out of the total number of subjects studied. This provided an idiographic estimate of interest. Participants' judgements were then compared with the actual interest stated by the original student.

Phase II. In the second phase of the study, participants were retested. They were provided with visual information on their relative beta weights expressed as a simple bar chart (see Figure 1 for an example). This showed the extent to which particular factors featured in their judgement. This was compared with the situation in the ecology. Participants were then asked to modify their judgement policy to bring it into line with that operating in the ecology. They completed the same batch of profiles as in Phase I.

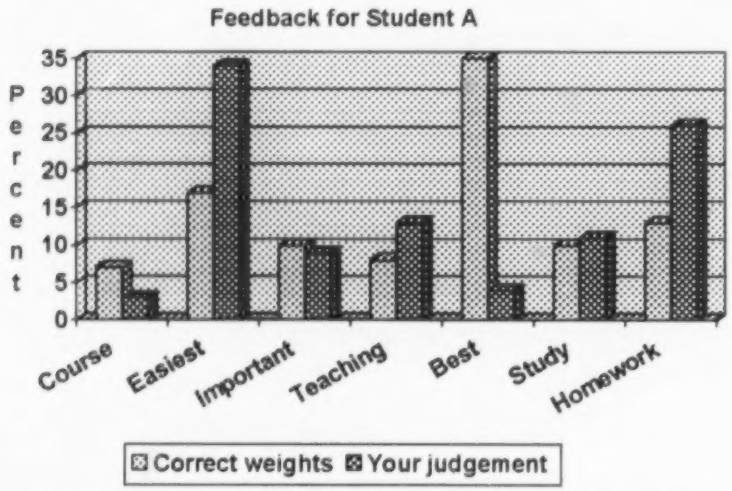

Figure 1. Sample of cognitive feedforward details provided to each participant

Validity of the cues. Prior to analyses of individual judgements, the validity of each of the seven cues for the 120 profiles was determined. This represented a judgement ecology (i.e., the actual environment). The multiple correlation of the seven cues with actual interest was 0.795 indicating a relatively high degree of task structure in the prediction of interest. The correlation coefficients between each cue and subject interest are indicated in Table 1 together with the standardised estimates (beta weights). Looking

at the standardised estimates (Table 1), the ecology indicated that whether it was the best subject and whether it was the easiest subject, were amongst the most important predictors of interest. Quality of teaching and the amount time devoted to homework had negative beta weights. The regression coefficients rather than correlations were considered because they indicate the amount by which interest would vary if the cue increased by one unit while simultaneously holding all other values constant.

Test-retest reliability of judgements. To check that students were making consistent judgements 20 out of the 120 profiles were included as repeat judgements. Test-retest correlations of these judgements with the original 20 were computed. As expected student test-retest consistency in their 120 judgements was moderate and varied markedly from –0.22 to a maximum of 0.868 in this group (mean = 0.43).

Table 1. Correlations and standardised estimates between interest and seven independent variables (cues) in the ecology (N=120)

Cue	Correlation with interest (cue validities)	Standardised estimates
Whether the student liked the course	.21*	.11
Whether it was their easiest subject	.55****	.28[a]
Whether it was their most important subject	.32***	.16[a]
Quality of teaching	.24**	-.13[a]
Whether it was their best subject	.71****	.56[a]
Amount of study time relative to other subjects	-.00ns	.16[a]
Amount of homework time relative to other subjects	-.09ns	-.21

*p< .05; **p< .01; ***p< .001; ****p< .0001; [a] t-value (b=0) p< .01

Analysis

The analysis of the judgements was undertaken for each individual using the lens model as the framework. The multiple regression of seven cues on student judgements of interest was calculated together with the extent of judgement accuracy. Additional indices that have been specified in lens model analyses, such as cognitive control, knowledge and task control, were also calculated.

A second aspect of the analysis was the partitioning of the difference between the 120 judgements of interest and the actual levels of interest into its components and determining the accuracy of judgements. An accuracy score which had been first applied in the field of weather forecasting (see Cooksey, 1996) was applied to these judgements. The accuracy was partitioned into three components which might account for judgement profile difference, namely: (a) elevation (the average distance between new judgements

and mean observed levels of interest); (b) scatter (the variation in judgement and observed interest profiles); and (c) the overall shape of the 120 judgement profiles (the achievement correlation).

The third aspect of the analysis was to compare the lens model indices (G, r_a, R_e, R_s, C) across the phases of the study. Correlations were converted to Fisher z_r before applying ANOVA. The results are reported in several stages. Firstly, the student responses in Phases I are considered individually and as a group then comparisons are made between the initial and subsequent responses after cognitive feedforward. Full details of the analysis are provided in the results section.

RESULTS

Judgement Policies

The judges in this study are operating in a reasonably predictable ecology (R_e= 0.795) but one in which no cue by itself would permit optimal prediction. A combination of cues (especially best subject, easiest subject, importance of the subject and homework time) is required to maximise achievement (r_a). Each person's performance needs to be analysed on its own and the individual lens model indices are reported in Table 2.

Table 2. Summary of lens model parameters for participants

	R_A	R_E	G	R_S	C	*Accuracy Score*	*Most important relative cues*[a]
Phase I							
A	068	795	556	317	-125	459	Easiest, teaching, study
B	662	795	884	939	011	922	Best
C	304	795	616	573	047	800	Easiest, important, teaching, study
D	166	795	408	575	-040	710	Important, teaching, homework
E	488	795	795	709	092	816	Easiest, important, teaching, study
F	341	795	539	803	-009	852	Easiest, important, teaching, homework
G	221	795	577	527	-040	844	Liking course, teaching, best, homework
H	406	795	726	662	052	869	Liking course, easiest, best, homework
I	093	795	440	331	-039	781	Liking course, important, teaching, best, study, homework
J	159	795	494	473	-050	726	Easiest, important, best, study
Mean	290	-	603	590	-010	777	
Phase II							
A	634	795	927	788	143	906	Liking course, best
B	281	795	769	508	-056	797	Teaching, best, homework
C	464	795	647	728	215	875	Easiest, important, teaching, best, homework
D	287	795	510	675	030	797	Easiest, teaching, homework
E	573	795	916	732	094	813	Easiest, best, study, homework
F	298	795	464	625	142	768	Easiest, important, best, study, homework
G	280	795	576	614	-002	859	Easiest, important, best, study, homework
H	400	795	749	687	-020	874	Liking course, important, best, study
I	421	795	765	674	025	858	Best, homework
J	-053	795	-069	525	-048	440	Liking course, easiest, homework
Mean	358	-	625	655	052	798	

[a] only cues with relative weights ≥ 0.1 are listed; decimal points omitted

Taking student A as an example for individual interpretation, it can be seen that in Phase I, this person's level of judgement was the lowest in the group (r_a = 0.068), that the level of cognitive control over her judgements was poor (R_s = 0.317). This judge was only moderately aware of the requirements of the task (G = 0.556) and the unmodeled component of his/her knowledge was negative (C = -0.125).

In Phase I, student B had the highest level of achievement (r_a = 0.662) in her group. The level of cognitive control (R_s = 0.939) and task knowledge (G = 0.884) were high and the unmodelled knowledge (i.e., residual) was very low (C = 0.011). Similar individual explorations can be made for each person to determine the lawfulness of their behaviour. Table 2 provides only a brief summary of the judgement policy used.

Students differed in the extent to which they placed their emphasis on the different cues. This is seen in the relative beta weights, which represent the proportion of the total of the absolute values of the beta weights. Medians of the relative beta weights are reported in Table 3 and selected cues are listed in the last column of Table 2. In Phase

I, students placed relatively greater emphasis for themselves on the time devoted to homework, the extent to which the subject was important and how easy it was. This was not consistent with actual ecology that gave the greatest emphasis to ability.

The lens model parameters focus on the shape or the pattern of the total number of judgements in comparison to the total values for the ecology. In contrast to the correlational lens model indices, the accuracy score focuses on the absolute distance between a participant's profile of 120 judgements compared with the actual 120 levels of interest (see Table 4). The results indicated quite high levels of accuracy, with the main impediment to accuracy being in the shape of the profile from judgement to judgement (ie, the nuances of profile to profile difference). It appears then, that the judges were relatively good at the broad indication or direction of interest but that the specific pattern of judgement of the rank ordering of preferences was not easy for everyone.

Table 3. Relative beta weights (%)

Phase I	Like course	Easiest	Important	Teaching	Best	Study	Homework
A	2.5	33.9	9.3	12.9	4.3	10.5	26.3
B	2.3	4.5	1.2	6.0	84.6	0.7	0.3
C	8.2	32.9	13.8	21.2	3.5	16.8	3.3
D	5.0	6.7	38.9	13.7	1.9	6.1	27.2
E	8.2	33.3	17.6	10.1	7.4	18.2	4.8
F	0.3	17.7	25.1	25.6	5.6	8.4	17.0
G	12.8	7.5	6.9	30.9	15.4	8.6	17.6
H	27.0	12.3	0.0	9.6	25.7	9.9	15.1
I	33.4	2.4	16.5	13.2	12.7	0.9	20.5
J	6.0	27.6	26.1	4.6	11.3	18.3	5.7
Median	7.1	15.0	15.1	13.0	9.4	9.3	16.1
Phase II							
A	14.3	12.5	2.4	1.5	57.2	4.0	7.8
B	9.7	0.1	5.4	11.8	40.7	5.6	26.4
C	1.7	22.8	27.2	17.7	10.1	2.6	17.4
D	9.1	18.6	4.3	22.7	10.0	7.5	27.6
E	1.9	12.0	6.9	7.4	40.7	20.1	10.7
F	7.8	11.8	11.2	8.9	19.4	19.2	21.3
G	2.8	10.6	14.6	9.2	32.3	8.4	21.8
H	13.1	3.2	32.0	6.3	22.6	12.6	9.9
I	1.5	0.8	1.0	5.3	63.4	0.7	27.0
J	48.0	12.4	4.0	6.1	2.4	9.1	17.6
Median	8.5	11.9	6.1	8.1	27.4	7.9	19.4

Table 4. Judgement profile parameters (scatter, elevation, shape)

	Phase I			Phase II		
	Scatter	Elevation	Shape	Scatter	Elevation	Shape
A	096	006	438	000	000	093
B	002	002	073	000	027	175
C	000	011	187	001	001	122
D	006	025	257	000	010	191
E	004	025	153	017	021	147
F	001	000	146	003	025	203
G	007	000	147	010	000	129
H	002	000	128	005	001	118
I	000	000	218	000	001	139
J	005	012	255	012	200	347

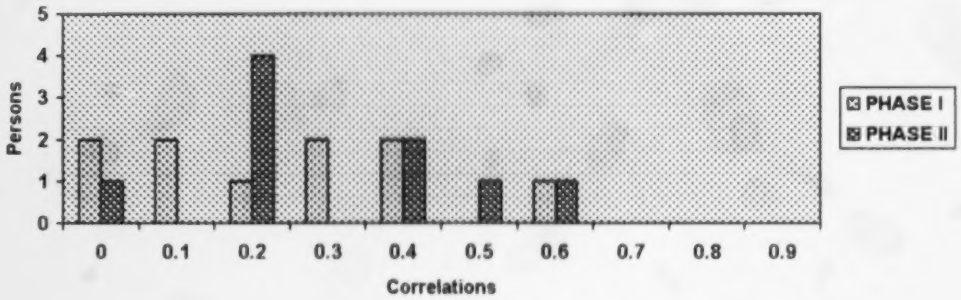

Figure 2. Distribution of achievement (r_a) in Phase I and Phase II

Cognitive feedforward

Students indicated only a marginal improvement in their capacity to judge the actual level of reported interest. For example, correlations of students' judgements with the actual level of interest increased from a median level of 0.290 to 0.358 (see Figure 2), and accuracy scores increased from a median of 0.777 to 0.798. This slight improvement was consistent across all the lens model parameters but there were some inexplicable individual variations. For instance, not all individuals increased their level of achievement (refer to Table 2 for these comparisons). Nevertheless and to their credit, the participants did give greater emphasis to weighting ability (an increase from 9.4% to 27.4% relative emphasis) but they also increased the relative weight of other less important cues. The results of the ANOVA did not indicate any statistically significant increase in the lens model parameters from Phase I to Phase II.

DISCUSSION AND CONCLUSIONS

The results of these quantitative case studies confirmed firstly a marked individual variation in perceptions relating to the judgement of interest in vocational education subjects. It was difficult to discern a consistent strategy that was used to judge educational interest. Participants ignored important factors such as ability and indicated poor consistency in their judgements. The latter, of course, is typical of human judgement under conditions of complexity and uncertainty. The results also provide a powerful indication that we really do not know how people decide when someone says that he/she is interested in a subject in technical and further education.

Although the results pointed to the fact that participants were able to benefit from some aspects of cognitive feedforward, there was not a significant improvement in judgement accuracy. Participants did focus on the most important cue but they also committed other errors in weighting. It may be that the complexity of this task with seven cues was too much for them. Additional training sessions may be required to increase the level of accuracy. In any event, it implies that people may not be sensitive to important information about their level of performance as a basis for deciding upon areas of educational interest.

While many laypersons acknowledge that people are best at what they like and like most what they are best at doing, it does not appear that this simple folk wisdom could be applied. In Phase I, participant B applied this simple rule and gave best subject a relative weight of around 85% and as a result had an accuracy of 0.922 and achievement of 0.622 with high levels of knowledge and control. In Phase II, however, this accuracy was lost. Inexplicably, the relative emphasis on the best subject was more than halved and accuracy fell to 0.797 while profile achievement plummeted to 0.281 from 0.622.

Most teachers and students are prepared to accept that given a person's values and abilities, then his or her interest is important for learning and development in vocational education or training. The *doctrine of interest* is also an important part of the folklore of teaching and this asserts that there is an obligation to make learning as interesting as possible. Interest, however, is largely a subjective phenomenon. For its assessment, we

rely mainly but not exclusively on some form of self-report and determination of a person's level of interest depends largely on someone's perceptions and inferences. While earlier research has focused on the nature and structure of interest (Renninger, Hidi & Krapp, 1992) it has not always considered the extent to which perceptions of interest can be modified and trained. The purpose of this study was to determine the components of perceived interest and whether there was any influence of information on perceptions of classroom interest in a vocational education setting. It highlighted the power of a representative design to examine judgements and explore the dimensions of educational interest. Results confirmed the multivariate basis for human judgements of interest and supported only a minor improvement as a result of cognitive feedforward. While the results were broadly consistent with the German conceptions of individual interest (Schiefele, 1991), there is still a need to identify the most salient components of individual interest for learners in vocational education.

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References

Athanasou, J A in press, 'Components of intra-individual interest in vocational education subjects: some Australian data', in *Interest and Gender* eds L. Hoffman, A. Krapp & A. Renninger, IPN, Kiel.

Athanasou, J.A 1994, 'Some effects of career interests, subject preferences and quality of teaching on the educational achievement of Australian technical and further education students', *Journal of Vocational Education Research*, vol.19, pp.23-38.

Brunswik, E 1952, *The conceptual framework of psychology*, University of Chicago Press, Chicago.

Cooksey, R W 1996, *Judgment analysis*, Academic Press, San Diego, Ca.

Hidi, S 1990, 'Interest and its contribution as a mental resource for learning', *Review of Educational Research*, vol.60, pp. 549-571.

Hursch, C J, Hammond, K R & Hursch, J L 1964, 'Some methodological considerations in multiple-cue probability studies' *Psychological Review*, vol.71, pp.42-60.

Krapp, A 1993, 'The construct of interest. Characteristics of individual interests and interest-related actions from the perspective of a person-object theory', *Studies in Educational Psychology, No.4*, Institut fur Erziehungswissenschaft und Padagogische Psychologie, Universitat der Bundeswehr Munchen.

Renninger, K A 1992, 'Individual interest and development: Implications for theory and practice', in *The role of interest in learning and development*, eds K A Renninger, S Hidi & A Krapp, Erlbaum, Hillsdale, NJ, pp. 361-395.

Renninger, K A, Hidi, S & Krapp, A 1992, *The role of interest in learning and development*, Lawrence Erlbaum Associates, Inc, Hillsdale, NJ.

Schiefele, H 1974, *Lernmotivation und motivieren*. [Motivation to learn and acquisition of motives] Ehrenwith, Munchen.

Schiefele, U & Krapp, A 1996, 'Topic interest and free recall of expository text', *Learning and Individual Differences*, vol 8, pp 141-160.

Schiefele, U 1991, 'Interest, learning and motivation', *Educational Psychologist*, vol 26, pp. 299-323.

Schiefele, U, Krapp, A & Winteler, A 1992, 'Interest as a predictor of academic achievement: A meta-analysis of research' in *The role of interest in learning and development, eds* K A Renninger, S B Hidi & A Krapp, Lawrence Erlbaum, Hillsdale, N.J.

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This report is a draft for inter-office circulation. Comments and criticisms are invited.
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